REMARKS/ARGUMENTS

Reconsideration and allowance of the subject patent application is respectfully requested. Claims 4-13 are currently pending. Claims 1 and 10 are amended above so as to give greater emphasis to some of the novel and patentable features set forth by this claim. Claim 13 is amended above to correct for minor typographical error indicating claim dependencies.

The rejection of claims 4-13 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Correia et al. (U.S. Patent 5,662,160) in view of Coulson (U.S. Patent 6,582,197) is respectfully traversed.

Correia et al. ('160) disclose a method of investment casting a turbine nozzle, including an external shell and an internal core component, that permits controlling fillet wall thickness of the nozzle airfoil. However, as recognized in the Office Action at page 3, Correia et al. fails to teach or suggest the use of an internal core assembly that results in the production of a datum structure or one or more datum pads on a cast article, as set forth by Applicants' claims.

The Coulson ('197) reference is supplied in the Office Action as allegedly teaching the use of a "datum pad" (plastic identification tag 30) and a "method for the purpose of effectively providing datum pad on a ceramic core for use in casting molten metallic materials having corresponding data (cast geometric features) corresponding to the datum pad on the core."

Applicants respectfully disagree with the above characterization of Coulson's plastic identification tag 30 as a "datum pad" of the type set forth and described in Applicants' specification and claims. The Coulson '197 patent is directed toward a method of investment casting wherein a relief pattern representing a unique part identification number (i.e., identification tag 30) is provided on a fugitive pattern of the article to be cast. (See '197 patent Abstract and Figure 1). Applicants respectfully contend that an ID tag is not a "datum pad" nor

is it a functional equivalent. As conventionally understood in the art, a datum pad formed on an object is used for the purpose of serving as a reference point for establishing an orientation of the object and/or the position and orientation of various physical features of the object with respect to that reference point. Applicant respectfully contends that there is no teaching or suggestion by Coulson that the identification tag 30 formed on a cast article could be used as a datum pad in the above sense or as a geometrical reference point for ascertaining either the respective positions of other features cast on the object or an orientation of the cast object.

Moreover, the identification tag 30 of Coulson '197 is attached to a surface 10s of the root portion 10a of the fugitive wax pattern 10 which results in producing the identification tag feature on an exterior portion of the cast object. In contrast, Applicants' datum pads are cast reference point features created by a separate integral core piece that "floats" (i.e., is suspended or supported, for example, by fugitive materials) within the shell mold which patterns external features of the cast object. Thus, this "free-floating" core piece creates the internal pattern features of the cast object. In Applicant's disclosed implementation, this "free-floating" core piece is also used to create datum pads that are fixed relative to other internal cast features. Applicants have observed that since this core piece is "floating", no matter how accurately positioned or secured, there will almost always be differences (changes) in the relative positions between internally formed features and externally formed features for successive castings – which may be caused, for example, by inherent casting process variables and/or other uncontrollable environmental factors. Therefore, a datum reference system tied to the shell mold and external cast features will not accurately reference the position of internal cast features produced by a core piece which may be located a slightly different position within the shell mold from one casting to the next due to such process variables.

Consequently, a datum reference system specific to core produced internal features (i.e., one that "moves" with the core piece), as set forth in Applicants' claims, is distinguished from and unobvious over the prior art of record. In this regard, an ID tag/marking cast on an outer surface of the cast article cannot serve as a reference datum point for internal feature cast (formed) by a floating core piece which may shift in position with respect to external portions of the object during the casting process. Thus, assuming arguendo (in hindsight) that the teachings of Coulson and Correia et al. could be combined, that combination would fail to teach or suggest the provision of a geometric reference system for locating internal cavity core-produced features of an investment-cast article as set forth in Applicants' independent claims 4, 6, 10 and 11.

The Office Action fails to cite prior art that remedy the deficiency of Correia et al. as set forth above or to suggest any motivation to modify Correia et al. to arrive at Applicants' claimed method and apparatus. There is no objective teaching or disclosure any where in Coulson ('197) or modifying the internal core piece (128) of Correia et al. ('160) to provide a datum pad geometric reference system relative to internal core-produced cavity features of a cast article such as a turbine airfoil part.

In addition, there are numerous features of claims which depend upon Applicants' independent claims 4, 6, 10 or 11 which further distinguish Applicants' claims from the Correia et al. and Coulson references.

In view of the Applicants' foregoing amendments and remarks, it is believed that the application is in condition for allowance. Favorable consideration and allowance of this application are respectfully solicited. If any small manner remains outstanding, the Examiner is encouraged to telephone Applicants' representative at the telephone number listed below.

Respectfully submitted,

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